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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/502,112 | 04/14/2005 | Shinji Shimosaki | 0149-044719 | 2110 |
| 28289 7590 04/19/2007 THE WEBB LAW FIRM, P.C. 700 KOPPERS BUILDING 436 SEVENTH AVENUE PITTSBURGH, PA 15219 | | | EXAMINER ROBINSON, ELIZABETH A | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1773 | |
| SHORTENED STATUTORY PERIOD OF RESPONSE | | MAIL DATE | DELIVERY MODE | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/502,112

Applicant(s)

SHIMOSAKI ET AL.

Examiner

Elizabeth Robinson

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-63 is/are pending in the application.
- 4a) Of the above claim(s) 37-62 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-36 and 63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 8-22-2005, 3-13-2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I, Claims 28 through 36, in the reply filed on March 23, 2007 is acknowledged. The traversal is on the grounds that the claims are sufficiently related, such that there would not be an undue burden on the examiner to search all claims. This is not found persuasive because Groups I and II are in different fields of search, due to their classification in US classes 428 and 427, respectively. It is further noted that the restriction requirement was based on lack of special technical feature as outlined in the Office Action of February 23, 2007.

The requirement is still deemed proper and is therefore made FINAL.

Claims 37 through 62 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on March 23, 2007.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 28 through 30, 33 through 36, and 63 are rejected under 35 U.S.C. 102(b) as being anticipated by Tada et al. (US 6,074,981).

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Regarding claims 28 through 30, Tada (Column 7, lines 15 through 31) teaches a photocatalyst bearing, nonwoven, glass cloth, where each individual inorganic fiber is coated with photocatalyst film. Tada further teaches that the photocatalyst layer can be comprised of titanium oxide (Column 2, lines 59 through 62) and may be coated on the fibers using chemical vapor deposition (Column 3, lines 18 through 24).

Regarding claim 33, Tada (Column 13, lines 2 through 12) teaches a glass fiber-based nonwoven cloth with a photocatalytic layer consisting essentially of titanium oxide.

Regarding claim 34, Tada (see abstract) teaches that the photocatalyst layer can contain titanium oxide and other metallic oxide semiconductors. Tada (Column 2, lines 51 through 67) teaches specific metal oxide semiconductors, which include zinc oxide.

Regarding claim 35, Tada (Column 2, lines 63 through 67) teaches that the photocatalytic material can be a TiO_2 -Pt- RuO_2 alloy.

Regarding claim 36, Tada (Column 6, lines 46 through 51) teaches that doping with fluorine turns the colorless photocatalyst film gray.

Regarding claim 63, Tada (Column 7, lines 15 through 31) teaches a nonwoven cloth substrate consisting of inorganic fibers that are coated with a photocatalyst. The photocatalyst bearing material is used as an air filter for a clean room or air cleaner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tada et al., in view of Yamaguchi (JP 2001-335343). As stated above, Tada teaches a photocatalytic material comprised of glass fibers coated by vapor deposition with titanium oxide. Tada (Column 4, lines 50 through 54) further teaches that a heat treatment is necessary after vapor deposition to crystallize the initially formed amorphous titanium oxide. Tada does not teach the crystallite diameter. Yamaguchi (Paragraph 10, see machine translation, a formal translation will be provided with the next office action) teaches a photocatalyst film formed on glass by vapor deposition. The photocatalyst is anatase titanium oxide with a crystallite diameter of 20 to 200 nm (Paragraph 9). This range overlaps the range of the instant claim. Yamaguchi further teaches that the desired particle size can be easily obtained by heating or reheating the surface film (Paragraph 20), and that if the particle size is too large, then film strength falls (Paragraph 4). Yamaguchi does not teach forming the photocatalytic film on glass fibers. However, Yamaguchi and Tada are analogous arts because both are concerned with the problem of applying photocatalysts to glass substrates. It would be obvious to one of ordinary skill in the art to perform the heat treatment of Tada to obtain crystals of the size of Yamaguchi, in order to obtain a strong photocatalytic film on the glass fiber substrate.

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tada et al., in view of Baba et al. (JP 2000-072575). As stated above, Tada teaches a

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photocatalytic material comprised of glass fibers coated by vapor deposition with titanium oxide. Tada does not teach performing the vapor deposition with titanium tetrachloride. Baba (Paragraph 13) teaches depositing an optical catalyst titanium oxide film on a substrate by vapor deposition using titanium tetrachloride. Baba (Paragraph 14) further teaches that this method forms a coating film with high adhesive strength. In Paragraph 42, Baba teaches that the substrate is a construction material and in Paragraph 2 teaches glass construction materials. Baba does not teach forming the photocatalytic film on glass fibers. However, Baba and Tada are analogous arts because both are concerned with the problem of applying photocatalysts to glass substrates. It would be obvious to one of ordinary skill in the art to use the titanium tetrachloride of Baba to form the titanium oxide film of Tada, in order to obtain a highly adhesive photocatalytic film.

Information Disclosure Statement

Reference JP 11-512339 was not considered. No English language abstract was provided and further, document JP 11-512337 was provided, not JP 11-512339.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. A formal English translation of Takemura et al. (JP 09-000947) is included with this Office Action as was stated in the Office Action of February 23, 2007.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Robinson whose telephone number is 571-272-7129. The examiner can normally be reached on Monday- Friday 8 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ear




CAROL CHANEY
SUPERVISORY PATENT EXAMINER